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Geographical Publications . . . . . .

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The JOURNAL *of* GEOGRAPHY

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Dr. Ristow is Chief of the Map Division of the New York Public Library. From January 1942 to August 1944 he served as head of the Geography and Map Section in New York Office of Military Intelligence. He is also author of the descriptive text accompanying the new Trans-Orbal Map and of a chapter on cartographic history in the recent volume Global Geography. This is the eighth in our series of articles on what secondary school geography should be.

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Miss Svec is an instructor in the department of geography, State Teachers College, Buffalo, New York, and a frequent contributor to the JOURNAL and other educational magazines. This article is the product of many years of experimentation with children. In October she contributed an article entitled "Better Captions for Picture Study." She now has other material in preparation.

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Miss Hardy is a senior in the State Teachers College at Indiana, Pennsylvania, and is specializing in the teaching of geography.

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Dr. Blanchard of the University of Illinois, is well known to JOURNAL readers and also to teachers thruout the country who have used his texts. As a side line, Dr. Blanchard has gotten a lot of pleasure out of the formation of interest-stimulating devices. He has provided us with a series and we will publish them in future issues of the JOURNAL. This is the second one in the series. Both teachers and students will find it eminently worthwhile to answer the questions which he has raised. It is not our intent to publish a set of answers.

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Authors alone are responsible for opinions and statements in the JOURNAL.

Are You Teaching Geography?

"If we are to judge what constitutes the 'new geography' by the way it has been emphasized in our magazines and newspapers and by the production of polar-projection or 'Air Age' maps, we might well have the idea that it is mainly concerned with air distances, the direction of one place from another as traveled by the airplane, and the location of places brought to the forefront by the distribution of our armed forces and their war activities around the world. *Place or locational geography is important, but it is not real geography,* for geography is more than the names of places and the understanding of directions.* *Geography deals with the earth and its life. People are what they are partly because of the kinds of lands in which they have grown up.* Because the airplane is bringing nations nearer to each other, we need now more than ever to understand how other people live, how they think, and why they live and think as they do. Man's struggle to gain control over the natural resources in his own lands, to obtain raw materials for food and manufacture, to secure markets for the products he develops, and to have access to the trade routes over which his products travel to foreign markets, are all a part of geography. *The kind of land in each country makes its mark upon the people who live there.*"

From Curriculum Series: Number Three, by the National Council for the Social Studies.

* Italics are ours.

The JOURNAL *of* GEOGRAPHY

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VOLUME XLIII DECEMBER, 1944 NUMBER 9

WHAT THE WAR HAS TAUGHT US ABOUT GEOGRAPHY

GEORGE T. RENNER
Teachers College, Columbia University

War has a way of teaching some significant lessons quite apart from the moral issues involved. Probably the most significant lessons of the present war have been geographical.

America, almost alone among the great nations, has been accustomed to disregard geography as a major field of scholarship, and has relegated it to the position of a child's subject in the elementary school rather than one of the foundations of education. This practice has left the American people and their leaders peculiarly inept at understanding events and relationships in terms of the world in which they live. This would be ludicrous if it had not proven to be so nearly disastrous to the nation.

EIGHTEEN POINTS

The preceding statement is not a partisan opinion derived from viewing a general situation, but is a direct inference from specific evidence brought to light by our war experience. Following are eighteen concrete lessons which that experience has taught us.

I. The war has shown us that Russia is the geographic key to victory over Germany. Without her, or if she had collapsed under the German onslaught, America and Britain could hardly have won the war in less than twenty years; perhaps not even then. In lesser degree, China has proven to be the key to victory over Japan. The lesson from these facts is that our program of pre-war national defense should have been based upon a close military alliance between America, Russia, and China; it would have almost certainly prevented this war. And yet such an alliance was the very thing which many of our leaders were dedicated to prevent.

II. The war has shown us that Germany with her superb geo-

graphical access to the Eurasian Heartland, and with the whole continent of Europe mobilized behind her, could not defeat Russia. Obviously, then, America and Britain with very poor access to the Heartland, could not defeat Russia in any future war. The hope for our own future, therefore, must lie in building the kind of world wherein there is no possibility of war between America and Russia.[1]

Despite this basic geographic truth, we entered this war on very bad terms with Russia. Our attitudes were determined not by what we ourselves knew about that country, but they resulted from what we had been told by reactionary business leaders who did not like Russia's economic policies, and by reactionary clericals who were terrified lest Russia's policy of disfranchising her corrupt national church might spread to other European countries.

As a consequence, only a handful of geographers and other social scientists knew what was being built in Russia. Even most of our highest military leaders were betting that the Russian nation would collapse six months after the German attack.

III. The war has also taught us that small neutral nations with unrestricted sovereignity anywhere in the world may endanger our own national security. For example, Holland pursued a policy of isolationism and Holland-First. She refused to let Britain plan for her European defense, and gave us no naval bases in the East Indies. The Germans easily invaded her via the air. From Holland, the Germans outflanked Belgium. From Belgium they outflanked France. France collapsed and the "second front" was lost. In the Pacific the Indies were also lost. Upon America fell the tasks of reestablishing the second front which Holland's policies caused to be lost, and of retaking the Indies. We are learning, as we expend American lives and tax dollars, that tiny states, even where half a world away, are not profitable to us.[2]

IV. We used to think that Russia should be kept from controlling the Dardanelles. We have found that their possession by the small nation of Turkey almost cost us the war. The same applies to other strategic sites over the world.

V. Most of the world's major wars have orginated in Europe with its unbridled sovereignty of small national states. It was

[1] Renner, G. T., "Peace by the Map," Collier's, June 3, 1944, pp. 44-47.

[2] Renner, G. T., "Human Geography in the Air Age" Macmillan, N.Y., 1942, pp. 87-91.

formerly thought the union of these states was impossible. This war has shown that Russia has found one possible solution to this vexatious problem. She has accomplished a supra-national union of sixteen different nations without destroying their national cultures or losing their loyalties. She has, however, removed the possibility of warfare among them.

VI. This war immediately cut us off from our supplies of rubber, hemp, quinine, silk, copra, tea, rotenone, and a number of other materials.[3] Since then we have become aware that all the various climates and soils necesary for their production are duplicated in parts of the Americas. All that was needed was a lot of geographic knowledge and a little geographic planning to have avoided our present situation. We did not think that such regional planning could be done, but we now know that it can be accomplished easily. The war has revealed that Russia has done a vast deal of this kind of geographic planning.

VII. We have learned that solidarity within our hemisphere is not a matter of abstract ideology, but of concrete geographic reality. For example, Chile's delay in breaking with the Axis was largely a matter of having a long, indented coastline almost impossible to defend. Argentina's refusal to break with the Axis is at least partly a result of economic-geographic competition with the United States and her commercial-geographic ties to Europe.[4] Anti-American reaction in Paraguay is resulting from that country's accessibility to Argentina.[5] Sectional interests in Peru, Bolivia, and Colombia, are the results of diverse regional geographies within Latin America.

VIII. The Japanese attack on Pearl Harbor revealed that there were great gaps in our national military defenses. More serious yet, it revealed great gaps in our nation's geographic thinking, gaps so serious that they permitted our great nation to coast along under the delusion that it was immune to attack. If one goes to the Congressional Record and reads the debates over the fortification of Guam, he can get a fairly good idea of the nature of these gaps in national thinking.[6] Altho Guam had been American territory for

[3] Op. cit., pp. 97-107.

[4] Meyer, A. H., "Current Events and Contemporary Geography," Chapter 24, in Global Geography, Crowell, N.Y., 1944.

[5] Sharp, R. H., "U. S. $5,000,000 for Paraguayan Road Backfires to Aid Argentina," *Christian Science Monitor*, June 22, 1944, p. 9.

[6] Congressional Record 1939, Vol. 84, part 2, various pages.

more than a third of a century, many Congressional leaders had not the slightest conception of what it was, where it was, what it was like, or what its geographic location meant. If this were true of an American island, it is obvious that geographic ignorance was even greater regarding foreign countries and territories.

IX. Up until our very involvement in hostilities, most Americans were thinking of national security in terms of hemispheric defense. Very few of our people, however, had any definite idea of what was included in our hemisphere, what points needed defending, or what was the actual relation of our hemisphere to the rest of the world.

Few indeed knew anything about Greenland, Iceland, the Galapagos, or the Aleutian Islands on the great circle route to Japan. Almost no one knew anything about Rabaul, Yap, Truk, Saipan, Guam, Dakar, or the Azores.

X. In the course of this war, the flood of news from the various fronts has been constant and complex. Any real understanding of this news requires competence in visualizing all parts of the world in their own regional settings, and in seeing our relations to them. This the public does not have. Our nation needs better and more adult geographic concepts.[7]

XI. The war has shown us that the Pacific is America's ocean. To most Americans, however, it is and has been very remote. Nearly every island in it has been, or will be, sprinkled with American blood. We must control the Pacific or cease to be a world power. But to control it we must know it.[8]

XII. From this war we have learned, almost too late, that the strategy of war is geographical.[9] It is only the execution of strategy which is military. We have learned even more quickly that military supply is also largely geographic. From these lessons, it is but a step to the realization that post-war diplomacy and world business are matters of very great geographical implication.[10]

XIII. General Marshall is reported to have stated that "the army which knows the most geography will win the war." This

[7] Atwood, W. W., "Geography in International Relations," *Education*, January, 1938, pp. 258-261.

[8] Courtney, W. B., "We Must Win in the Pacific," *Collier's*, December 26, 1942, pp. 14-15; 65-67.

[9] Renner, G. T., et al., "Global Geography," Crowell, 1944, N. Y. Chapter 26.

[10] Peattie, R., "Geography in Human Destiny," Geo. W. Stewart, N.Y., 1940, Chapter 17.

great conflict, however, has shown us that our army did not know much geography.

One consultant to the War Department writes, "We've had to deal with army officers who did not know that deserts were dry, that forest vegetation was related to rainfall, or that Madrid was in Spain. We've had to avoid the use of many simple geographical terms. The rank and file have a very limited vocabulary and hate to learn new words; and yet we must teach them new ideas. Of course there are many officers who are well educated, but there are few indeed who are informed along geographic lines."

The War Department realized this lack and accordingly set up an extensive geography offering in its A.S.T. Program. Experience with this program reveals that geography, as presently organized in education, is pretty miscellaneous, and not clearly oriented as to social aims. It needs to be stripped down to fundamentals, reorganized educationally, and reoriented—regardless of traditional practices.

XIV. The war has taught us that few people can read maps, fewer yet can interpret them, and only a very few can make them. And yet there are fewer things more necessary than map skills. During this war, the United States government and its army have probably had to use more maps than have all previous generations of men.

XV. This war has taught us some basic truths about national power. We used to believe, almost universally, that our great strength depended primarily upon our people and our institutions. The present conflict has revealed that instead it is to an important degree a matter of rich geographic resources in proportion to population.[11] To take only one instance, the relation of population to arable land: in the United States there are 100 people per square mile of arable land and in Russia about 70. In Italy, however, there are 500, in Germany, 600, and in Japan 2,500. This raises some questions in relation to world peace and post-war control which most of us had not suspected: the question of controlling future population increase in the interest of peace, for instance.

XVI. Our war training program has shown us that we are superbly able to train our manpower for production (even overproduction), but that we know next to nothing about human en-

[11] Renner, G. T., "Natural Resources in the Post-War World," *American Journal of Sociology*, March, 1944, pp. 430-440.

gineering. Human engineering obviously means planning for society in relation to specific environments. Understanding this latter is the distinctive field of geography. Lacking geography in our education, we lack the very basis for social planning.

XVII. We have discovered that there is in this country no public opinion which understands and backs our foreign policy. A foreign policy is a program of political action operating in specific geographical settings. If there is no geographic understanding, the political program is meaningless except in terms of abstract ideological decisions. It may have moral meaning but it certainly has no meaning in terms of world reality. One does not get geographic understandings by reading a book, or seeing news reels, or perusing a map. One gets it thru a prolonged program of training in geographical thinking about the world's peoples, states, and resources. That this is lacking among our politicians and even among our educators is clearly evidenced. The Connally and Ball resolutions, the Mackinac declaration, the President's recent vague statement of post-war peace plans, and the Republican Party's foreign policy platform are all practically meaningless when measured in geographical terms.

XVIII. Lastly, the war has shown us that this world of today is vastly different than that of a few years ago. The implications of this new world and its new geography are even more drastic than those which assailed man's mind when he first realized that the world was spherical.

Technological advances have shrunk and remoulded the world to where the physical basis of isolation no longer exists.[12] The airplane and the radio have brought the peoples of the entire world into a close community which is now smaller in access-relationships than was the United States twenty-five years ago. The airplane and the radio have produced a new planetary human ecology.

Heretofore, geographers were primarily interested in studying human society in its local and regional environmental setting, but this war has added the necessity for studying it in its planetary or global setting. Masses of unlike peoples are beginning to rub elbows so sharply, that either perpetual warfare or a cooperative world order must result. A lot of geographical thinking is going to be required in dealing with this new global community.

[12] Orton, D., "Strategy for Post War Schools," Proc. 59th Annual Meeting, N. Y. State Association of Secondary School Principals.

WHAT ARE WE DOING ABOUT IT?

The fate of civilization today hinges upon a race between political catastrophe and geographic education. The Army in its Specialized Training Program, dumped thousands of young men into courses in geography. Meanwhile a large proportion of the trained geographers had been called into government service. This meant that there were almost no trained geography teachers available to conduct the A.S.T.P. Hence, an appalling shortage of geography teachers developed.[13] So far, American education has done practically nothing toward permanently curing this situation.

Newspapers are making some novel attempts at map education, running feature articles on lands and peoples, and editorials on regional and global relationships. A few of the more alert magazines are also carrying geographical articles.[14] The airlines are attempting a real program of geographic education directed at the lay public. The cinema, however, is doing very little, and some of that is spurious. The radio is doing almost nothing at all to develop geographic concepts.

Air power is the new decisive instrument of human geography in this global community, and we have had to master it partially in order to survive this war. We must fully master it if we are to build and maintain a peace.[15] Air power within itself, however, is only an instrument capable of being used either for good or for evil. Hence, while mastering it, we must realize that the greatest task of education is to create a new national psychology designed to broaden the good neighbor policy and implement it on a global scale. In undertaking to build any such policy, it is absolutely essential that we understand other nations. We can get such understanding not by studying abstract facts about them, but by studying them concretely in their environmental setting, learning what resources of location, space, terrain, and natural materials they possess, how they are interacting with the factors of their environment, and how this interaction is determining their attitudes and policies.[16]

[13] Britton, R. L., "Some Impacts of the War on Geography," JOURNAL OF GEOGRAPHY. January, 1944, pp. 34-36.

[14] *The American Magazine, Collier's, Harper's, Life, Fortune,* and a few others.

[15] Renner, G. T., "How the United Nations Must Police the World," *American,* Sept. 1943, pp. 30-31.

[16] Caldwell, L. L., "World Geography—A Tentative Course of Study for High Schools," Dept. of Public Instruction, Indianapolis, Indiana. Bulletin 160, 1943, p. 5.

The greatest failure of American education so far is that it has not taught Americans much about the geography of other peoples, or to realize their own geographic destiny, or to accept the constructive responsibilities of that destiny. We have done nothing to protect our people from the obvious fallacies of geographic isolationism or the suicidal doctrine of pacifism. The pacifists and isolationists, while for the most part sincere, were so geographically unrealistic that they rank second only to the Hitlerites in making this war inevitable.[17]

Professor Albert Hart recently coined two cogent epigrams, namely:

a. National power without morals leads to murder: witness Germany, Japan, Italy.

b. Morals without national power leads to suicide: witness Poland, Norway, Denmark, Holland, Belgium.

To these we should now add a third:

c. Morals with national power which is not used because of geographic ignorance may lead to both murder and suicide: witness the U. S. A. prior to the attack upon Pearl Harbor.

Actually the attack upon Pearl Harbor, bad as it was, was the best thing which could have happened to us. Without it, we still might not be in the war; our friends might have gone down to defeat one by one; after which the Axis might have turned their full attention to us.

December 7th must always be a day of dishonor for Americans, but it is doubly regrettable because our people do not as yet really know why the attack upon Hawaii came nor how near to succeeding it came. As one newspaper editor points out, "The military gaps have been closed. But have the breaches in America's mental defenses been filled with nation-wide understanding of the truly international basis of American security? When the votes of the people and the sayings of their senators on foreign-policy issues offer proof that they have, then December Seventh might be suitable for observance as the day the isolationists began to wake up, having been kicked out of bed first."[18] In addition, that date might become an educational holiday marking the day when America embarked upon a program of concrete geographic education in lieu of one based upon vague abstractions and theories. Meanwhile,

[17] Wood, B. D. Public Lecture, Eau Claire, Wisconsin, May, 1942, under the auspices of the Civil Aeronautics Administration.

[18] Editorial page, *Christian Science Monitor*, December 3, 1943.

the present young generation is having to make ghastly sacrifices because of the geographic ignorance of our own generation of elders.

WHAT SHOULD WE DO?

Our system of self government manifests two distinct aspects: (a) the formulation and support of a domestic policy, and (b) the formulation and support of a foreign policy. It is necessary to the success of both phases of self government that a large number of citizens be enlightened upon, and intelligent with regard to, the issues and actions involved. This perhaps is less important in domestic programs because where these turn out badly the results are near at hand and obvious. This gives the citizens a chance to demand a reversal of policy and the instituting of remedial action.

The results of foreign policies, however, are neither near at hand nor immediate in their occurrence. International relations at any given time are the fruits of a long series of cumulative acts and intentions. They become visible to the masses only after it is too late to do anything about them. The uninformed citizen is unaware of them until their fruition overwhelms him in war or other political disaster. It is highly essential, therefore, that any people which undertakes to govern itself, be informed as to world relationships; indeed, in the present era it is inescapable.

In the past the world was divided into many regions poorly accessible to one another. Failure of a citizenry to understand world relationships was bad, but not catastrophic, in such a situation. In the present world, the various regions still exist, but their inaccessibility is gone. Time-distances have dwindled, the regions are mutually accessible, the operating radii of bombers and rocket bombs is rapidly increasing, and the world community demands integration. But that integration requires geographic thinking of a high order, and the only way to get the needed geographic thinking is thru education. "A world community implies great moral and psychological changes—changes which cannot be produced without a change in education."[19]

The eighteen bits of evidence presented in this paper show unequivocally that the problems facing us are not elementary in their nature. They are, on the contrary, the kind of problems which

[19] Hutchins, R. M., "The State of the University." *The Alumni Bulletin*, November 1, 1943, University of Chicago, Page 22.

can best be treated on the college level. Since the great majority of Americans do not go to college, geographic education at that level will not provide an adequate answer. No answer at all can be provided at the elementary level.

A large part of our neglect of the kind of education necessary for geographic thinking, arises from our national misconception of what geography is.[20] In America, we have traditionally misconstrued geography as place location and travel description.[21] Location, however, has meaning only when it is related to something; place description has meaning only when it demonstrates the operation of the principles of geography. Anyone who studies chemistry, henceforth thinks differently from one who has not. Similarly, one who has studied geography will henceforth think differently from one who has not done so. America lacks people who can think geographically. To be sure, Americans now know where the Solomon Islands, Tunisia, and Stalingrad are; they know that the Normans are politically conservative, and that the Russians have built some industrial districts in Siberia; our leaders now know what Rabaul, Truk, and Kiska are. But all this is one-use factualism. A new war or a post-war peace problem will bring an entirely new set of places into the picture. Whereupon most of the specific facts learned in this war will have little value. Certainly they will not help people solve their then current problems. Facts change and places shift; it is only the principles which continue to operate. This war has not taught us the principles. That is the task of public education.

The place to teach the principles of geography or human ecology in the modern world, is in the high schools of the nation. They will either teach the American people to do geographic thinking or it will not be done.

Much of our high school education is simply the product of current and immediate situations, sprinkled with a residue of the traditional classics.[22] It is not a system built to create and serve a world community. Vested interests continue to exaggerate the values of certain materials and to insist upon teaching certain subjects at the expense of geography. Meanwhile the problems of a dynamic geographical world press in upon us from every direction.

[20] Merriam, W. B., "The Distinctive Contribution of the Geographic Point of View," *Education*, January 1938, pp. 301-307.

[21] The reasons for this are embedded deeply in the history of American education.

[22] Stiles, D., "Why not Teach Geography," *Harpers*, May 1943.

AIR AGE GEOGRAPHY: A CRITICAL APPRAISAL AND BIBLIOGRAPHY

WALTER W. RISTOW
New York Public Library

INTRODUCTION

Something new has been added to geography! This is hardly a novel experience, for a number of *new* geographies have been conceived and born within the life span of many members of the profession. Looking back, we can recall the colorless *location* geography still current around the turn of the century, *physical* geography popular in the first decade of the nineteen hundreds, and *human* geography which emerged in the years preceding the first World War. By 1915 *economic* geography was gaining a position which has been maintained, at some educational levels, virtually down to the present.

The forced contacts with other countries of the world, brought about by our participation in World War I, led to a brief interest in *world* geography and *political* geography. It is interesting to read the comments of geographers at that period, and note the parallelism with the geographic viewpoint of today.

In 1919 L. O. Packard noted "that a knowledge of other countries and our relationship to them will be indispensable to the citizen of tomorrow is apparent to anyone who realizes the active part which this country is now taking and is sure to continue to take in world affairs."[1]

"There never was a time," wrote Atwood in the same year, "when so many of the people of the world were really interested, perhaps unconsciously, in geography."[2]

Fairbanks likewise emphasized the need of a world viewpoint in geography in the period immediately following the Armistice of 1918. "Now is the time," he observed, "when we need to introduce into school geography a universal viewpoint. . . . We need to make geography more real and vital in order that the children now growing up may be able to take their parts intelligently in the new community of nations."[3]

That the geographers of twenty-five years ago were aware of

[1] L. O. Packard, in JOURNAL OF GEOGRAPHY, January 1919, p. 24.
[2] W. W. Atwood. Geography in America, in *The Geographical Review*, January 1919, p. 39.
[3] H. W. Fairbanks, in JOURNAL OF GEOGRAPHY, May 1919, p. 186.

their responsibilities and opportunities is evident from the above quotations. Their voice, however, was weak and their numbers inadequate to cope with the wave of nationalistic reaction which followed the Versailles Treaty. The world viewpoint was thrust in the background as the nations of the world, America among the foremost, proceeded to erect physical, economic, and social barriers separating their nationals from other peoples of the globe.

World geography gave place to regional and home geography during the twenties and thirties, as geographers fell in line with the official policy and the national viewpoint. At annual meetings professional geographers vied with one another in presenting detailed analytical studies on very limited areas, and regional geography threatened to evolve into micro-geography.

These regional studies, especially when supported by personal field surveys, added greatly to the volume and accuracy of geographical knowledge about the various parts of the world. They served, however, to emphasize the divisions of the world, and few attempts were made by geographers or non-geographers in these years to view the world as a unit of interrelated countries and peoples.

Geography after Pearl Harbor

Forced into the center of World War II by the attack on Pearl Harbor on December 7, 1941, Americans suddenly awakened to the fact that we are definitely concerned with that part of the earth which extends beyond our natural, and heretofore impregnable, boundaries.

More completely world-wide in scope than the war of 1914-1918, World War II became known to writers and speakers as a *global* war. The new and significant role played by the airplane and air power in this war served to emphasize the general geographical illiteracy of the American public.

It soon became apparent that our geographical viewpoint was again in need of adjustment to meet the new demands of our political and military leaders, as well as for educating the man on the street in the new *global* concepts.

Emergence of Air Age Geography

Air Age geography is the term which has been coined to describe this modern approach to geographical study. It is the latest in the long series of *new* geographies, and is an outgrowth of our ex-

panding geographical horizons resulting from fighting a war in all parts of the globe, and of the exciting new implications of air power and rapid world-wide air transportation.

Despite the glowing enthusiasm of the Air Age publicists, it would be folly to discard completely the geographic fundamentals of yesterday, but all intelligent and far-sighted geographers will agree that a new emphasis is in order to meet the challenge of the Air Age. With modern aircraft negating many of the natural barriers which restricted land-bound transportation, we must recognize that our geographical thinking needs to be brought up to date.

The implications of present and future air routes over hitherto barren and inaccessible lands are comparable, and, in some ways, even more revolutionary, than the changes in geographical thinking which resulted from the discoveries of Columbus or the invention of the steamboat. All geography becomes *home* geography when the most distant point on earth is less than sixty hours from your local airport. Air Age geography thus is *world* geography, with the world greatly reduced in size as measured by the fourth dimension of *time*. All nations are truly neighbors, and now more than ever before, they must learn to live in peace and harmony.

PRINCIPLES OF AIR AGE GEOGRAPHY

Teachers of geography, for the most part, looked with favor upon the new emphasis in geographical study, but many of them floundered at first in a sea of uncertainty, lacking as they did, the essential aids for teaching Air Age geography. Today there is a growing literature on the subject both for the class room and the layman.

A number of articles have appeared in professional and popular journals and periodicals expounding the new ideas and concepts, and several geography textbooks, emphasizing the Air Age, are now available. These, naturally, vary greatly in quality, but in general there is agreement on a number of basic principles which form the foundations of *Air Age Geography*. These principles are here briefly summarized:

1. *Air Age geography is global geography.* A world wide war and long-range aircraft have finally brought general acceptance of the fundamental fact that we inhabit a globe. Regional geography must be supplemented and tied together by world geography, for in the Air Age world all regions are intimately related. Admittedly,

geographers are by training world-minded, but we must now more than ever emphasize global problems in our teaching, and not take them for granted.

2. *Geography is not a static science.* Altho the physical makeup of the earth does not change appreciably, certain dynamic factors, on occasions, do call for new concepts which require basic reorientation of our geographic study and teaching. The far reaching implications of air-power require a shift in geographical emphasis today. When geographical principles become frozen and geographical thinking stagnates, geography as a science will cease to exist.

3. *Air Age distance is measured by time rather than space.* Physical distance has ceased to be an important barrier between places on the globe. Magellan required 1100 days to sail round the world, the fictitious hero of Jules Verne's novel, in 1872, did it in 80 days, and travellers of the 1890's circled the globe in 60 to 70 days. By 1929 the Graf Zeppelin cut the time to 20 days, and Howard Hughes covered the distance in less than four days in 1938. With modern aircraft it is possible today to completely span the earth in as little as 120 hours flying time. Antipodal points on the globe are thus separated by only sixty hours. There are no longer any far corners of the earth. Isolationism is certainly impractical and impossible in the Air Age.

4. *Transport by air discounts geographical barriers.* Air transportation is not confined to old established routes nor limited by physical features. The sea of air offers no restrictions to movement and airways can thus follow the most direct course. Mountains, deserts, oceans, and ice bound regions will not disappear but their influence will be modified.

5. *The world is not divided into hemispheres.* The old concept of the division of the earth into eastern and western hemispheres is out-dated. Global geography recognizes no such arbitrary division, for the sphere can be divided into two equal parts along any great circle. In the Air Age it is more practical to refer to northern and southern hemispheres, or better, the land hemisphere and the water hemisphere. The traditional idea that our closest ties are with Latin America is not based on geographical facts. A polar centered Air Age map emphasizes our greater proximity to the land masses of the northern hemisphere by air via the Arctic skyways. All the capital cities of Europe are nearer to Washington, D.C., than is Buenos Aires, Argentina.

6. *World transportation routes are no longer restricted to east-*

west lines. Location of most of the leading countries of the world in the middle latitudes of the northern hemisphere resulted in communications along east-west lines. This was increased by the reliance of sailing vessels on the easterly trade winds and the westerlies. Mercator's projection, with its east-west elongation, helped to impress the east-west concept on the popular mind. Travel by air, from a given place, is possible in *all* directions on our spherical earth. The shortest distance between two points is along the arc of a great circle. A knowledge of the great circle principle is fundamental to Air Age geography.

7. *Ocean basin geography is out of date.* When international travel was limited to ocean vessels there was a strong community of interest among nations bordering a given sea. We readily accepted such regional geographical units as the Mediterranean basin, Atlantic basin, Caribbean area, and Pacific basin. Air transport, following direct great circle routes between land bases, does not encourage such close regional interests around water basins. For example, the people of Seattle, Washington, have long considered the Pacific area their primary concern. Natives of that city would perhaps be surprized to learn that the most direct air route from Seattle to Tokyo is almost 200 miles longer than a great circle route from Seattle to Oslo, Norway!

8. *New significance of weather and climate in the Air Age.* Modern aircraft, equipped with pressure sealed cabins and oxygen tanks, can fly in the stratosphere, above the atmospheric disturbances characteristic of lower altitudes. Thus, even the restrictions of weather on air travel are being minimized. Former climatic barriers of desert wastes and ice covered areas can easily be crossed. Regions of greatly varying climates are brought nearer together by the airplane, with a consequent possibility for greater interchange of products.

AIDS FOR TEACHING AIR AGE GEOGRAPHY

To understand and teach the principles of Air Age geography new visual aids are required, and there is no lack of such material at present. During the past few years a number of new so-called Air Age maps, globes, and atlases have been published. Most of the maps are on some variation of the polar azimuthal projection, reintroduced to the modern world by Richard Edes Harrison in the July, 1941 issue of *Fortune.*

The polar projection illustrates especially well the grouping of

the continents around the Arctic Ocean, and with the emphasis on present and future great circle air routes crossing the polar regions to unite these lands, it has become the symbol or trade mark of Air Age geography.

The orthographic projection has been revived also by modern cartographers. Its resemblance to a photograph of a globe accents the global form of the earth. For plotting great circle routes the gnomonic projection is best, for a straight line drawn between any two points on the map represents the arc of a great circle. A North Pole centered gnomonic map by Harrison was issued as a supplement to *Fortune* in May, 1943.

These new maps have pushed into the background the old familiar Mercator projection with its rectangular shape and its great distortions of land area in the polar regions. While the polar projections are better adapted to illustrate Air Age ideas, it is well to recall that no flat map is a true representation of the earth, and that no one map can solve all our geographic problems. The Mercator projection is still best suited for navigation purposes and will continue to be used by sea and air navigators.

The new geographical concepts have modernized globe manufacture too. To permit better examination of the polar regions many globes are now issued with no fixed axis. The globe ball rests normally in a shallow basin, from which it may be removed for personal study. One company has recently put out an Air Age Globe based on the Air Map introduced by American Airlines. This globe has no land outlines, but on the uniform blue surface of the ball are located a number of the important cities of the earth. The absence of land divisions emphasizes the barrier-free Air Ocean which is the travel medium of the Air Age.

Mention should perhaps be made of the attempts by several cartographers to bridge the gap between flat maps and globes. The Dymaxion Globe, invented by R. Buckminster Fuller, was reproduced and described in the March 1, 1943, issue of *Life,* while the *Icosahedron* of Prof. Irving Fisher is discussed in the *Geographical Review* for October 1943 and the *New York Times* of October 3, 1943. The latter has been published in several sizes by the author and may be purchased at nominal cost.

Several new atlases and textbooks designed to illustrate and describe Air Age geography have been published recently. Utilizing the polar, orthographic, gnomonic, and other modern projections, as well as true perspective maps, the atlases are designed to empha-

size the global nature of geography and of world problems. They are not meant to replace completely the standard physical and reference atlases.

SUMMARY

An America which has participated for three years in a global war has awakened to the importance of a knowledge of world geography. This global viewpoint must be nourished and enlarged, and a revitalized program of geography teaching can do much to bring this about. Air Age geography has captured the imagination of the masses. It is still in its infancy, however, and we must take care not to ascribe to it any strange and unusual powers. As we have stated above, the fundamentals of geography have not been changed or replaced. The new Air Age has, however, reoriented our geographic thinking. To direct and guide that thinking calls for far-sighted and imaginative teaching. Geographers, for the most part, are aware of this challenge and opportunity. Let us hope their efforts meet with greater success than did those of their colleagues of twenty-five years ago.

A BIBLIOGRAPHY OF AIR AGE GEOGRAPHY

1. BOOKS AND PAMPHLETS

Bartlett, Hall. Social studies for the air age. Air Age Education Series. New York: The Macmillan Company, 1942. 169 p.

Bauer, Hubert A. Globes, maps, and skyways. Air Age Education Series. New York: The Macmillan Company, 1943. 75 p.

Chase, W. Linwood. Wartime social studies in the elementary school. No. 3 of Curriculum Series. Published by National Council for Social Studies.

Consolidated Vultee Aircraft Corporation. Maps . . . and how to understand them. New York: Consolidated Vultee Aircraft Corporation, second edition revised, July 1943, 30 p. [Pamphlet.]

Engelhardt, N. L., Jr. Education for the air age (a guide for teachers and administrators). Air Age Education Series. New York: The Macmillan Company, 1942. 55 p.

Engelhardt, N. L., Jr. Into the air age. New York: Air Age Education Research, 1944. Unpaged. [Pamphlet.]

Engelhardt, N. L., Jr. New frontiers of our global world. New York: Noble & Noble, 1943. 140 p.

Hankins, Grace Croyle. Our global world. New York: Gregg, 1944. 90 p.

Howe, Elvon L. Air world: the new geography of air power. Denver, Colorado: The University of Denver Press, 1943.

Lawrence, Chester H. New world horizons. New York: Duell, Sloane, and Pearce, 1943. 92 p.

Packard, Leonard O., Bruce Overton, and Ben D. Wood. Our air-age world; a textbook in global geography. New York: The Macmillan Company, 1944. 838 p.

Renner, George T. Human geography in the air age. Air Age Education Series. New York: The Macmillan Company, 1942. 238 p.

Renner, George T. and associates. Global geography. New York: Thomas Y. Crowell Company, 1944. 680 p.

U. S. Navy Department. Bureau of Aeronautics. Air Navigation, Part One, Introduction to earth. Flight Preparation Series. New York: McGraw Hill Book Co., Inc., 1943. 79 p.

Van Zandt, J. Parker. The geography of world air transport. Washington, D.C.: The Brookings Institution, 1944. 67 p.

Weigert, Hans and Vilhjalmur Stefansson. Compass of the world. New York: The Macmillan Co., 1944. 466 p.

Willkie, Wendell L. One world. New York: Simon and Schuster, 1943. 206 p.

II. PERIODICALS

Air Age Education News. Published bi-monthly by Air Age Education Research, New York City.

Atwood, Wallace W. The motion picture in teaching world geography. (*Education*, v. 64, no. 7, Mar., 1944, p. 404-408.)

Atwood, Wallace W. Global or world geography. (The JOURNAL OF GEOGRAPHY, v. 43, no. 6, September, 1944, p. 202-204.)

Bartlett, Albert. Education for the air age. (*Flying*, v. 35, no. 3, September, 1944, p. 50-51, 92-93.)

Bryan, Capt. G. S. Commercial overseas aviation routes. (*United States Naval Institute Proceedings*, v. 66, no. 452, October, 1940, p. 1427-1446.)

Bryan, Rear Adm. G. S. World maps. (The *Scientific Monthly*, v. 59, no. 4, October, 1944, p. 245-252.)

Burnham, Capt. F. I. Guides for global war. (*Air Force*, v. 26, no. 2, Feb., 1943, p. 22-23; v. 26, no. 4, Mar., 1943, p. 29-30.)

Davis, M. Maps in a changing world. (Excerpt: *Michigan Alumnus*, v. 48, no. 24, July 25, 1942.)

Engelhardt, N. L., Jr. Air world geography. (*Education*, v. 64, no. 7, Mar., 1944, p. 413-419.)

Engelhardt, N. L., Jr. Education for the air age. (*Education*, v. 64, no. 10, June, 1944, p. 583-590.)

Engelhardt, N. L., Jr. Maps and charts for the air age. (The *School Executive*, September, 1944.)

Fisher, Irving and O. M. Miller. So you think you know geography. (*Science Digest*, v. 16, no. 4, October, 1944, p. 24-25.)

Fisher, Irving. A world map on a regular icosahedron by gnomonic projection. (The *Geographical Review*, v. 33, no. 4, Oct., 1943, p. 605-619.)

Fitzgerald, Lt. Col. Gerald. Aeronautical charts in an air age. (*Bulletin, American Congress on Surveying and Mapping*, v. 4, no. 1, Jan., 1944, p. 13-17.)

Fortune Magazine. Published monthly. Contains frequent articles and maps of interest to Air Age geography.

Fuller, R. Buckminster. Dymaxion world. (*Life*, v. 14, no. 9, Mar. 1, 1943, p. 41.)

Fuller, R. Buckminster. Fluid geography. (The *American Neptune*, v. 4, no. 2, April, 1944, p. 119-136.)

Geography-Science Bulletin. Published monthly by Rhode Island College of Education, Providence 8, R.I.

Givens, William E. Air lanes and education. (*Education*, v. 64, no. 10, June, 1944, p. 590-594.)

Global war teaches global cartography. (*Life*, v. 13, no. 5, Aug. 3, 1942, p. 57-65.)

Hansen, Harry. Thinking on a global scale. (*Survey Graphic*, v. 33, no. 7, July, 1944, p. 329-330.)

Hanson, Earl Parker. The polar route to victory. (*Harper's Magazine*, v. 185, no. 1110, Nov., 1942, p. 639-641.)

Harrison, Richard Edes. The face of one world. Five projections for an understanding of the air age. [Review of 5 books.] (The *Saturday Review of Literature*, v. 27, no. 27, July 1, 1944, p. 5-6.)

Harrison, Richard Edes and Robert Strausz-Hupé. Maps, strategy, and world politics. (The *Infantry Journal*, v. 51, no. 5, Nov., 1942, p. 38-43.)

Hayden, Sherman S. No more wilderness. (*Audubon Magazine*, v. 46, no. 1, Jan.-Feb., 1944, p. 31-35.)

Hessler, Lt. William H. Sea power in global war. (*United States Naval Institute Proceedings*, vol. 70, no. 9, whole no. 499, September, 1944, p. 1077-1086.)

Howe, Elvon L. This air world. (*Flying*, v. 33, no. 6, Dec., 1943, p. 21-23, 186-188.)

Jensen, J. Granville. Geography in our day. (*Quarterly Journal of the Rhode Island Institute of Instruction*, v. 17, no. 2, Oct., 1943, p. 29-31.)

Kaempffert, Waldemar. Map problems: Prof. Fisher's icosahedron solves many of them. (The *New York Sunday Times*, Oct. 3, 1943.)

Luyten, W. J. Those misleading new maps. (*Harper's Magazine*, v. 187, no. 1121, Oct., 1943, p. 447-449.)

Newsweek. Published weekly. Contains occasional articles and maps of interest to Air Age geography.

Our aerial neighbors. (*This Week Magazine, New York Herald Tribune*, September 24, 1944, p. 6-7.)

Parsons, Richard D. Education faces the Air Age. (*Education*, v. 64, no. 10, June, 1944, p. 595-599.)

Perspective map, Harrison atlas gives fresh new look to old world. [An account of the atlas "Look at the world," by Richard Edes Harrison.] (*Life*, v. 16, no. 9, Feb. 28, 1944, p. 56-61.)

Picklesimer, Parnell W. Our changing geography. (The JOURNAL OF GEOGRAPHY, v. 42, no. 7, Oct., 1943, p. 266-271.)

Porter, Russell. New world to old in ten hours. (The *New York Times Sunday Magazine*, June 4, 1944, p. 16-17, 40.)

Rediscovering the earth. [Editorial.] (*The New York Times*, Aug. 23, 1943.)

Renner, George T. Air Age geography. (*Harper's Magazine*, v. 187, no. 1117, June, 1943, p. 38-41.)

Renner, George T. Peace by the map. (*Colliers*, June 3, 1944, p. 44, 47.)

Renner, George T. Pitfalls for the peacemakers. (The *American Magazine*, v. 138, no. 5, November, 1944, p. 34-35, 36, 110-111.)

Ristow, Walter W. Maps for global war. [Editorial.] (*Library Journal*, v. 68, no. 8, April 15, 1943, p. 324-325.)

Shearer, M. H. Air-age physical geography in our secondary schools. (The JOURNAL OF GEOGRAPHY, v. 43, no. 6, September, 1944, p. 213-222.)

Staff of Air Age Education Research. The contribution of the library. (*Education*, v. 64, no. 10, June, 1944, p. 619-623.)

Taba, Hilda. Which distortions. (The *Elementary School Journal*, v. 44, no. 4, Dec., 1943, p. 197-200.)

The gay cartographers. [Editorial.] (*New York Herald Tribune*, July 13, 1944, p. 14.)

The geography of post-war air routes. [A symposium.] (The *Geographical Journal*, v. 103, no. 3, Mar., 1944, p. 89-99.)

Time. Published weekly. Frequent articles and maps of interest in Air Age geography.

De Voto, Bernard. The falsity of geopolitics in an air age. Review of "Compass of the World," edited by Hans W. Weigert and Vilhjalmur Stefansson. (*New York Herald Tribune Weekly Book Review*, September 24, 1944, p. 1-2.)

Whitaker, J. Russell. Flat maps are not enough. (Excerpt: The *Nation's Schools*, v. 32, Oct., 1943, p. 46.)

Whittaker, Wayne. Maps for the air age. (*Popular Mechanics*, v. 79, no. 1, Jan., 1943, p. 28-32, 161-162.)

Williams, Joseph. New maps for the study of global geography. (Reprinted from Mar. 1943 number of *California Journal of Secondary Education*, p. 173-176.)

Wright, John K. America grows map-minded. (*American Mercury*, v. 57, no. 237, Sept., 1943, p. 331-338.)

III. ATLASES

Army Service Forces. Atlas of world maps for the study of geography in the Army specialized training program. Washington, D.C.: Army Service Forces, 1943. xiii + 30 p.

Harrison, Richard Edes. Look at the world: the *Fortune* atlas for world strategy. Text by the editors of *Fortune*. New York: A. A. Knopf, 1944. 67 p.

Mowrer, Edgar Ansel and Marthe Rajchman. Global war, an atlas of world strategy. New York: William Morrow and Company, 1942. 128 p.

Newsweek's global war atlas. Unbound. 10 p. with accompanying pamphlet, Global War 1939-1943. 36 p. New York: *Newsweek Magazine*, Jan., 1944.

Office of War Information. A war atlas for Americans. New York: Simon and Schuster, 1944. 86 p.

Raisz, Erwin. Atlas of global geography. New York: The Global Press. Distributed by Harper and Brothers, 1944. 64 p.

War Department Orientation Course. A graphic history of the war, Sept. 1, 1939 to May 10, 1942. Washington: U. S. War Department, c. 1943. 72 p.

IV. MAPS

1935. World on the Casson projection. (8 pointed star projection centered on North Pole.) With several inset maps. Scale, 1:26,300,000. 63 x 44 inches. Colored. New York: Universal Map Company, 1935.

1938. Amateur radio map of the world. With brief explanatory text. Modified equidistant azimuthal projection centered on central United States. Scale, 725 miles to an inch. 40 x 30 inches. Colored. West Hartford: The Amateur Radio Relay League, 1938.

1938. Imperial Airways. Interrupted orthographic projection. With several insets and illustrations. No scale. 25 x 40 inches. Colored. London: Imperial Airways, Ltd., 1938.

1939. World flights map. Orthographic projection of land hemisphere. No scale. 38 x 24 inches. Colored. Los Angeles: Pacific Geographic Society, 1939.

1941. Azimuthal world projection centered on Oakland, California. Scale, 1800 miles to an inch. 10 x 8 inches. Uncolored. Schenectady: General Electric Radio Department, 1941.

1941. Azimuthal world projection centered on Schenectady, New York. Scale, 1800 miles to an inch, 10 x 8 inches. Uncolored. Schenectady: General Electric Radio Department, 1941.

1941. Hub of the universe. Drawn for the *Christian Science Monitor* by Erwin Raisz at the Institute of Geographical Exploration, Harvard University. Oblique azimuthal equidistant projection centered on Boston. No scale, 12 x 10 inches. Colored. Published in *Christian Science Monitor*, Apr. 12, 1941.

1941. The world divided. Drawn by Richard Edes Harrison. North polar azimuthal equidistant projection. Latitude scale, approximately 1500 miles to an inch. 14 x 20 inches. Colored. Printed in *Fortune*, July, 1941.

1942. Air map. Projection centered on North Pole. No continental outlines shown. "Ad-

vertisement which appeared in newspapers during week of Nov. 2, 1942." No scale. 15 x 15 inches. Uncolored. New York: American Airlines, Inc., 1942.

1942. Atlantic arena. A *Fortune* map. Drawn by Richard Edes Harrison. With inset map and descriptive text. Orthographic projection centered at 35° N. 30° W. Approximate scale, 395 miles to an inch. 21 x 27 inches. Colored. Supplement to *Fortune*, June, 1942. New York: Time, Inc., 1942.

1942. From here to there: world distances from New York. By Edwin L. Sundberg. Azimuthal equidistant projection centered on New York City. Approximate scale, 1200 miles to an inch. 14 x 21 inches. Colored. Printed in *New York Sunday News*, Mar. 15, 1942.

1942. One world, one war. A *Fortune* map. Drawn by Richard Edes Harrison. With 2 insets and brief descriptive text. North polar azimuthal equidistant projection. Latitude scale, 800 miles to an inch. 21 x 27 inches. Colored. Supplement to *Fortune*, Mar., 1942. New York: Time, Inc., 1942.

1942. World map for the Air Age. By George T. Renner. With 2 inset maps and brief descriptive text. Polar azimuthal equidistant projection. Latitude scale, 500 miles to an inch. 43 x 43 inches. Colored. Chicago: Rand, McNally & Co., 1942.

1943. The air age octovue map of the world. Edited by Harold B. Ward. Pitner projection, equal area. With inset maps centered on North and South Poles. Scale, 500 miles to an inch. 39 x 52 inches. Colored. Milwaukee, Wis.: L. E. Pitner, 1943.

1943. Global map for global war and global peace. Illustrations along margins and on verso. Drawn by A. Petrucelli. Polar azimuthal equidistant projection. Equatorial scale, 600 miles to an inch. 24 x 33 inches. Colored. New York: Aluminum Company of America, Apr., 1943.

1943. Great circle airways. A *Fortune* map. Drawn by Richard Edes Harrison. With 3 insets and brief descriptive text. North polar gnomonic projection. Scale at point of tangency, 1:81,000,000. 20 x 25 inches. Colored. Supplement to *Fortune*, May, 1943. New York: Time, Inc., 1943.

1943. Likaglobe: A map foldable into a near globe. By Professor Irving Fisher of Yale University. With 3 insets. No scale. 18 x 23 inches. Uncolored. Also available in 3 other forms. New Haven: Irving Fisher, 1943.

1943. The new polar projection global world chart. With descriptive text, distance table, and two insets. Equal area double polar projection interrupted along 12 meridians. Scale 560 miles to an inch. 46 x 36 inches. Colored. Chicago Heights, Ill.: Weber Costello Company, 1943.

1943. Northern and southern hemispheres. Double polar projection. With 2 insets and airline distance tables. Scale 632 miles to an inch. 20 x 40 inches. Colored. Washington, D.C.: The National Geographic Society, Apr., 1943.

1943. Polar aeronautical world. Edited by Glenn T. Trewartha. With inset of South Polar regions and diagram of world atmosphere. Azimuthal equidistant projection. Latitude scale, 425 miles to an inch. 42 x 62 inches. Colored. Chicago: A. J. Nystrom & Co., 1943.

1943. Polar lobate globoid map of the world. Lobate projection centered on North Pole. Equal area type. By Floyd A. Stilgenbauer. Scale, approximately 550 miles to an inch. 50 x 38 inches. Uncolored. Detroit: Wayne University Press.

1943. Polar map of the world. Inset map of South Pole. Illustrations and text on verso. Polar azimuthal equidistant projection. Scale, 936 miles to an inch. 20 x 27 inches. Colored. Chicago: Rand McNally & Co., 1943.

1943. The polar world, climatic. By Joseph Williams. Lambert azimuthal equal area projection centered on North and South Poles. Average scale, 1300 miles to an inch. 11 x 22 inches. Uncolored. Stanford University: The University Press, 1943.

1943. World air map showing flying distance in miles. Shows only outline of United States.

No scale. 11 x 17 inches. Two color. Published by Fred Wild Company, Chicago, for Clipper Carloading Company, 1943.

1943. The world from all angles. Six hemisphere maps on various projections. By Edwin L. Sundberg. With short descriptive text. No scale. 22 x 14 inches. Colored. Printed in *New York Sunday News*, Feb. 21, 1943.

1943. World island. A *Fortune* map. Drawn by Richard Edes Harrison. With inset map and short descriptive text. Orthographic projection centered at 36° N., 60° E. Scale, approximately 1:25,000,000. 21 x 27 inches. Supplement to *Fortune*, January, 1943. New York: Time, Inc., 1943.

1943. World map. North polar azimuthal equidistant projection. Illustrations along sides of map. No scale. 20 x 17 inches. Colored. Map copyrighted 1943 by Rand McNally and Company. All other matter copyright 1943 by Transcontinental and Western Air, Inc.

1944. World air map. North polar azimuthal equidistant projection, interrupted in southern hemisphere. No scale. 12 x 17 inches. Two color. Map copyright Vaucher & Pirola. Published by Transcontinental Airline (TWA), 1944.

1944. Air world map. Illustrations around margin of map. Azimuthal equidistant projection centered on geographical center of United States. No scale. 20 x 24 inches. Colored. New York: American Airlines, Inc., 1944.

1944. Distances and directions from New York. Azimuthal equidistant projection centered on New York City. Scale, approximately 550 miles to an inch. 17 x 16 inches. Two color. Prepared by the American Geographical Society at the request of the New York Port Authority, 1944.

1944. Global map showing over-land air routes. Azimuthal equidistant projection centered on geographic center of United States and geodetic center of North America. With descriptive text. Compilation by Capt. Bentley Barnabas and R. T. Aitchison. No scale given. 35 x 22 inches. Colored. Wichita, Kansas: The McCormick Armstrong Company, 1944.

1944. News map of the week. Published weekly. Azimuthal equidistant projection base used intermittently. No scale. 20 x 24 inches. Colored. Chicago: News map of the week, Inc., 1944.

1944. The story map of flying, being a chronicle of man's conquest of the air. Polar azimuthal equidistant projection. No scale. 27 x 20 inches. Colored. Winchester, Massachusetts: Ernest Dudley Chase, 1944.

1944. The trans-orbal map: a Global Press map for one world. With 3 insets and a descriptive text by Walter W. Ristow. Modified orthographic projection centered on western Europe. Scale at center of map, approximately 600 miles to an inch. 40 x 26 inches. Colored. New York: The Global Press Corporation, 1944.

1944. A series of 7 true perspective maps of the various fronts. Drawn by Kenneth W. Thompson. Descriptive text by George Fielding Eliot. Scale varies. Each map 12½ x 19 inches. Colored. Copyright 1944 by Remington Rand, Inc.

1944. Polar air age world. Azimuthal equal area projection. Inset of south polar regions. Edited by Hubert A. Bauer. Scale 400 miles to an inch. 58 x 44 inches. Colored. Chicago: Denoyer-Geppert Company, 1944.

1944. United States centered air world. Azimuthal equidistant projection. Inset polar centered map showing standard time zones of world. Also chart of air distances. Scale 485 miles to an inch. 45 x 64 inches. Colored. Chicago: A. J. Nystrom & Company, 1944.

V. Miscellaneous

Air globe. Created and designed by P. P. Willis for American Airlines, Inc., produced and marketed by Rand McNally and Company, Chicago, Illinois. With explanatory booklet and index of places. 12 inch diameter. 1944.

Air age radio program. Prepared under supervision of Lyman Bryson, Director of Education, Columbia Broadcasting System. 146 programs during the school year designed to stimulate interest in many fields of science, global geography, and current affairs. Beginning October 11, 1944. Teachers manual, outlining all programs and offering suggestions for student activities and related reading, is available on request from the Education Division, Columbia Broadcasting System, 485 Madison Ave., New York 22, New York.

THE USE OF USGS MAPS AT HIGH SCHOOL LEVEL

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Now as never before the USGS* maps hold a fascination for the student in junior high school. He quickly appreciates the value of these maps that can tell him the lay of the land at a beachhead, the type of terrain to be encountered by a pilot, the opportunities for concealment along a highway, or the relief of Sleepy Hollow. One reason for the general lack of familiarity with USGS maps both in and out of school is the fact that we in the United States have long neglected the personal use of these maps, a practice in contrast to the wide spread use in England and on the continent of the similar and often more detailed topographic maps. Consequently most people do not feel as much at home with the USGS maps as they do with the free road maps obtained at the former corner filling stations.

In introducing the USGS maps to a class, it is desirable to work in the field as well as in the classroom. Some aspects of relief are visible from the window and doorstep of every school. Some sites are more advantageously located than others but no one school site would be so favorably situated as to provide actual models of all the varieties of relief. Therefore, the recognition of the many features, and the identification and recognition of symbols representing relief must be developed in the classroom. This article suggests some of the satisfactory devices used in a junior high school class.

* The letters USGS refer to the United States Geological Survey.

NOTE: An index to USGS maps may be obtained from the United States Geological Survey, Washington, D.C. There may be suitable maps available for your locality, state, or near-by area. Editor.

Fig. 1.

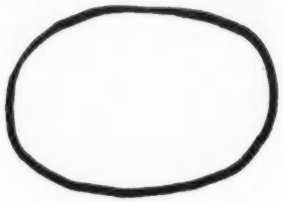

Fig. 2.

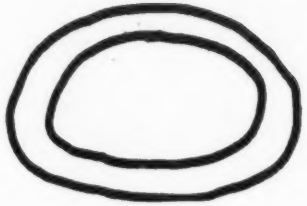

Fig. 3.

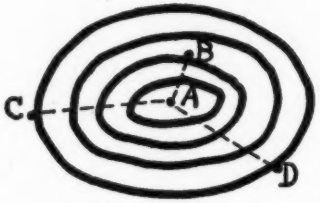

Fig. 4.

Fig. 5.

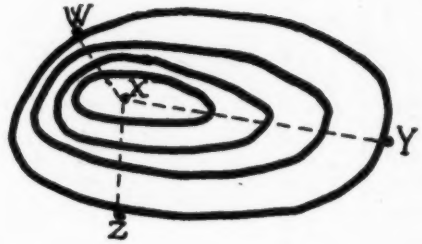

Fig. 6.

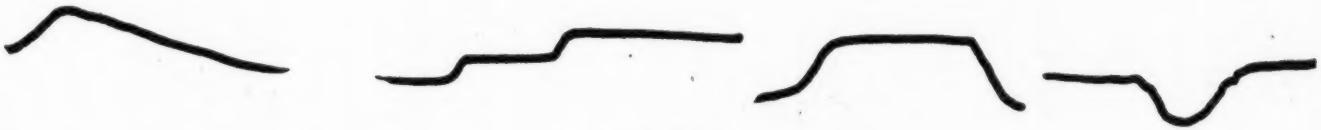

Fig. 7.

CONCEPT OF CONTOUR LINES

Since the USGS maps are often referred to as "contour maps" the concept of contour is readily developed. The students are familiar with both "tour" and "detour." Loosely defined, "contour" might be translated as "tour around" or "go in a circle." This idea grows out of the following suggested activities which have been used in class in lieu of a hill in the vicinity of the school.

STEP I. The profile of a hill is drawn on the board. In imagination a student is placed on the hilltop and observes his classmates walk around the hill on a path at the base of the hill (Fig. 1). The student on the hilltop then draws a line on the blackboard to represent the path his classmates followed (Fig. 2). If anyone in the class does not agree with the pattern drawn, then let that student stand on a desk and watch another pupil walk around the desk. The idea that the path is a circular line or oval-like in shape should be understood by everyone in the class. The group is now ready to resume the earlier situation.

STEP II. A student returns to the theoretical hilltop. The class now walks up the hill about one-fourth of the way beyond the first path. At this elevation, the class walks around the hill on a path at this theoretical level. The student on the hilltop now places a second path into the previous pattern (Fig. 3). If the students fail to see that the second path must be drawn inside the first path, then return to the desk demonstration with the conditions properly oriented. Obviously two more paths will fall within the first and second circles already drawn if the idea is carried thru two more steps.

ANALYSIS OF SYMBOLS

The hill is now seen in profile and in contour. The parts of the hill are labeled (Fig. 4) and the class is guided to interpret the relations of slope, distance, and direction. Some of the reasonable ideas that are to be learned from an analysis of the sketch are:

(1) The top of the hill is at ———.
(2) The base of the hill is at path ———.
(3) The slope along *AC* is about the same as at *AD* because ——————— and ———————.
(4) The shortest path shown is ———. This is true because ——————— and ———————.

After the use of simple profile and contour sketch, the concepts of steep slope and gentle slope are developed step by step as in the

regularly shaped hill in Fig. 1. Simple exercises to interpret these variations in patterns bring out the contrasts and comparisons (Figs. 5 and 6). Suggested problems are:

(1) The longest slope is along path ———. Proof is ———.
(2) The steepest slope is along path ———. Proof is ———.
(3) The path on the south slope is lettered ———.
(4) If path WX is 1 mile, then path XY is ——— miles long.
(5) The direction of path XY is ———.
(6) If you were at the base of this hill, which path would you choose to walk up to point X? Give reasons for your choice.

The shape and appearance of other types of relief features are suggested by the class and teacher. These examples may be seen from the classroom window, from pictures, or recalled from travel experiences. A rough profile of these types is sketched on the board by different pupils with results similar to the illustrations in Figure 7. The identification of the features brings up the terms: drumlin, terraces, mesa, and sinkhole. Using variations of the ideas already suggested, the teacher guides the analysis of forms and students can sketch correct topographic representations of these features.

Developed Generalizations

Some common generalizations are evolved at this stage. Directed by teacher comment and questions, a summary of ideas up to this point includes:

(1) Closely spaced contour lines indicate steep slopes or cliffs.
(2) Widely spaced contour lines indicate gentle slope.
(3) Depressions are indicated by closed contour lines with hachures.
(4) Features shown in profile can be illustrated in contour, and features shown in contour can be drawn in profile.

These generalizations are now applied to pupil experiences. They are able to suggest ways that this information is of use to a hiker, a pilot, a car driver, and one interested in real estate. Some students are able to suggest ways that a previous knowledge of the USGS maps would have helped them at camp, on trips, or in planning a fishing or sight-seeing holiday.

Selection of the First USGS Map for Class Use

By now the students are really interested in examining these wonder maps. The map used for this initial experience depends upon the set available, the part of the United States in which the class is located, and the kind of terrain that would suit the purposes

of an introductory lesson. A rather simple map with a common contour interval is desirable.

The many new symbols, the key and legend, the scales, and the place names will hold the attention of the individuals for several minutes. They will be so absorbed and occupied in discovery and exploration, that it is just as well to allow them time to satisfy some of this consuming curiosity. The teacher can move about the room to answer individual queries and to share with a student his pleasure at the discovery of the meaning of some data, or to direct a problem of interpretation to a student equal to the challenge. Informal discussion is resumed when students pool and share the information they have gathered from the study of the map.

PROCEDURE OF MAP ANALYSIS

The class is now ready for a systematic analysis of the map. The marginal data need to be examined and understood. Words such as quadrangle and survey are readily associated with more familiar terms, e.g.: a campus quadrangle, and Washington's surveys in the Ohio Country. Latitude and longitude are read and interpreted. It is helpful to sketch a grid on the blackboard and as a student reads the degrees, another student can write them on the proper lines. These distances are translated into miles, e.g.: ¼° Lat. = 17½ miles, and ¼° Long. (at 40° Lat.) = 13¼ miles. Thus the quadrangle with a scale of 1:62,500 covers an area equal to 17½ × 13¼ miles. This same area is pointed out on the wall map of the State or of the United States. A small rectangle (to scale) should have been prepared by the teacher and a student can now orient the card in the correct place on the larger map.

The fractional scale needs more explanation and demonstration than the graphic and statement scales which are commonly used at earlier grade levels. However, all three should be equally familiar to the students. They should be able to recheck by use of different scales the distances on USGS maps previously determined by computation of latitude and longitude. Further application of the idea of fractional scales should be made to the various illustrative materials in the classroom. A USGS map of 1:62,500 is better for introductory purposes than the 1:125,000 which should come later. The use of a rectangle four times the area of the 1:62,500 size is needed to cover the actual land area represented on the scale twice the denominator of the original.

The three colors: blue, brown, and black, and the kinds of

features each represents, will seem logical. The contour interval is now related to the earlier sketches of the hill.

The date of a map is important. If the students and the teacher are acquainted with the area mapped, some one will be sure to note ommissions of recent date, e.g.: a bridge, highways, a tunnel or a reservoir, irrigation or drainage ditches, and suburban developments. It is possible that some one can relate an incident since 1941 in which map data confused a scouting party or gave advantage to another patrol.

MAKING INTERPRETATIONS OF SYMBOLS

Up to this point the students have made an acquaintance with one USGS map. The mere identification of a feature for the sake of identification should rapidly expand into more meaningful ideas. The relationship between types of features and their location calls for an interpretation of actual map data. The following illustrations are to this point:

The roadway is straight and level. It parallels the base of the cliff. The highway from the ridge does not come down the face of the cliff but winds back and forth to make a gentle grade for traffic.

I know that the headwaters of this stream are here because the blue line is thin. Also the tributaries meet the main stream at this angle (indicates an acute angle) as they trickle off the hills. The actual elevation in the headwaters area is 1400 feet and over here in the northwest where the stream is larger the B.M. (benchmarker) is 1257 feet.

Students display a real curiosity about depression contours. The depth of the depression is estimated as readily as the elevation of a hill. The teacher must decide how far into the realm of the origins of sinkholes or kettleholes or lagoon formations the discussion should move with topics of this type.

Thruout all this seemingly abstract introduction to USGS maps the teacher needs to guide the students to visualize the real thing represented on the map. The contrast in slopes of hills, the descent of a stream, the area visible from a point of vantage, the area out-of-line-of-vision from a lesser elevation, the feeling of density or sparseness in settlements along the highways, the erosional effects of headwaters, the appearance of a part of the area from the lowest elevation in the area, these are suggested visual images obtained from the map.

EXPANDING THE ACQUAINTANCE WITH USGS MAPS

Another set of USGS maps will suggest different features but it might be best to delay changes in scale and contour interval for

another class period. The common relief types easily represented and identified should be used but the selection is qualified by regions in which students live. Among the acceptable features for early study are: delta, plains, lake or seashore, mountain or hill country, ridge or plateau, drumlins or mesas, swamps or sinkholes, and stream valley or canyons.

INDIVIDUAL PROBLEMS WITH MAPS

After the class has had the experience of examining a variety of types of relief features and culture patterns, a series of studies on the home state may be desirable. In this situation, each student has a single and different map. Questions are attached to each map. Planned as a worksheet, the student works entirely on his own. This same procedure serves as a checkup to ascertain what the students have learned and how well they can work independently. Altho the questions are often similar in nature and the technique of arriving at the interpretation is similar, each student will have to work out his own problems. Typical statements on the worksheet might be the following:

(1) The part of the state in which this area is located is in the ———— in the region known as the ————.
(2) I know this is so because ————.
(3) The main stream is called ————. Its direction of flow is ————. Facts that prove this statement are: ————.
(4) The highest elevation is ———— ft. and occurs in the ———— part of the map.
(5) The lowest elevation is ———— ft. and occurs in the ———— part of the map.
(6) If you were paddling a canoe up the Little Left Branch, the direction would be ————. Some of the difficulties along the way would be ———— and ————. (three waterfalls and a dam)
(7) The blunt effect on the small "lakes" north of Logtown are there because ————. ("man-made lakes" or reservoirs)
(8) The town of Beaver is ———— miles from Logtown by airline. The kind of place in which airports are located in these two towns is ————.
(9) The black line cutting across the map in the lower left area is a ———— (flume), and it is used for ————.
(10) Describe the view to the left of the railway as you approach Beaver from Logtown.
(11) Comment on population density on this map. Be specific about areas.

FACTS ARE RETAINED

The apparent ease with which students recall the details of individual projects weeks later has been amazing. For example: five months after we had used the USGS maps, a student who worked with the Massena Quadrangle recalled that the town was not on the St. Lawrence River and that the hydroelectric power

was developed by diverting water into an artificial channel which linked the local stream with the St. Lawrence. Other features are re-visualized and recalled for class use. Of course, in many instances the teacher may recall the item and then find a way to relate the thought to class discussion. If the association is evident some student will be eager to take over and complete the thought.

It is equally important not to assume things to be true that are not true in fact. It happens that there is a Sleepy Hollow on both the west and east banks of the Hudson River. On one map the class discovered Sleepy Hollow and at once different students offered such associations as The Legend of Sleepy Hollow and Ichabod Crane and Washington Irving. Before the comments were completed, one student waved his hand most violently and protested that what had been said was all wrong. The teacher had anticipated this—having said nothing to discourage the students offering the above comments. "Why do you object?" the teacher inquired. "Well," said Ned, "the Sleepy Hollow they are talking about is down near Tarrytown and that is down the Hudson and on the east bank and this map here, the Kaaterskill, is *up* the Hudson and on the *west* bank so that puts this Sleepy Hollow in the Catskills." The lesson was well learned by the rest of the class. If a student had not made the correction, it would have been the duty of the teacher to have brought about this same analysis in another way.

CONCLUSION

The more associations that can be pointed out in relation to the experiences of the students and to current events, especially to reports of troop movements and single incidents along the battle-fronts, to Scout activities and observations in the field, the more meaningful will be the lines and symbols on the USGS maps. Perhaps the most difficult thing to do is to visualize the mapped areas in terms of reality. It will be thru experiences mentioned above that the important and imperative ability and skill can be developed. By suggesting the site and situation, the students might be able to sketch the topography and of course the reverse of the plan as well. Frequent drill on such concepts as "contour lines bend upstream" and "upstream is toward the headwaters" is necessary to acquire skill and correct understandings. Short problem solving exercises presenting the same idea in a number of ways will help to fix the right concept and provide for growth in the ability to use and to think in terms of topographic maps.

THE BEEHIVES ARE GLOWING

JEAN HARDY
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The war has made many changes—industrial, economic, social—in our national life. One of the industrial changes affecting the people in the southwestern corner of Pennsylvania has been the recent renovation of the beehive coke ovens and their extensive re-employment after a long period of inactivity.

At the end of 1905 the beehive oven was all important, producing about 90 per cent of the coke manufactured in the United States. However, when a market developed for the by-products of coke, the beehive oven was soon superseded by the by-product oven. Altho the newer method was much more costly, it grew in importance because it was much more practical in that it conserved the gases and vapors liberated. The demand for by-products became so great that by 1929 only 10.8 per cent of the entire coke output of the United States was produced in beehive ovens.

Fig. 1. Distribution of beehive coke ovens in southwestern Pennsylvania. Reproduced with permission of the United States Bureau of Mines, with certain omissions by the author.

The war, however, has changed that situation. In spite of the fact that by-product ovens have proven more practical, alone they are unable to produce the vast amount of coke necessary to supply the record-breaking demand for blast furnace fuel. Hence, the beehive ovens, relatively old and out-of-date but little depreciated, have been brought back into service to take up a position somewhat like they held before. Over 15,000 ovens—most of them in southwestern Pennsylvania—have, as far back as 1941, been turning out 2,000,000 tons of severely needed coke, the substance which remains after coal, petroleum, and the like has been subjected to distillation.

Beehive Coke Ovens in the United States[1]

State	*Ovens*
Pennsylvania	14,378
West Virginia	1,140
Virginia	753
Utah	297
Alabama	294
Colorado	260
Tennessee	240
Kentucky	14
Total	17,376

Beehive Coke Ovens in Pennsylvania[1]

County	
Fayette	9,609
Westmoreland	3,341
Indiana	719
Beaver	240
Bedford	216
Cambria	152
Greene	101
Total	14,378

The oven gets its name from its shape which is like that of a beehive. Circular, it has a diameter which ranges from about 7 to 12 or 12½ feet at the base; its walls approximately 6 feet high, are constructed of fire-resisting brick and banked on the outside with loam and clay. There is an opening in the nearly hemispherical roof to permit products of combustion to escape. The floor, made of refractory bricks or slabs, is laid with a slight slope towards an arched opening in the front of the ring wall. As a rule, these ovens

[1] Statistical and Economic Surveys Coal Economics Division, Directory of Beehive Coke Ovens in the United States Producing Coal in 1942. United States Department of the Interior, Bureau of Mines, R. R. Sayers, Director.

are arranged in rows, known as banks, consisting of approximately 20 or 30 with doors that open outwards. When the ovens are ready to be charged with coal, the doors are bricked up about three-fourths of the way to the top.

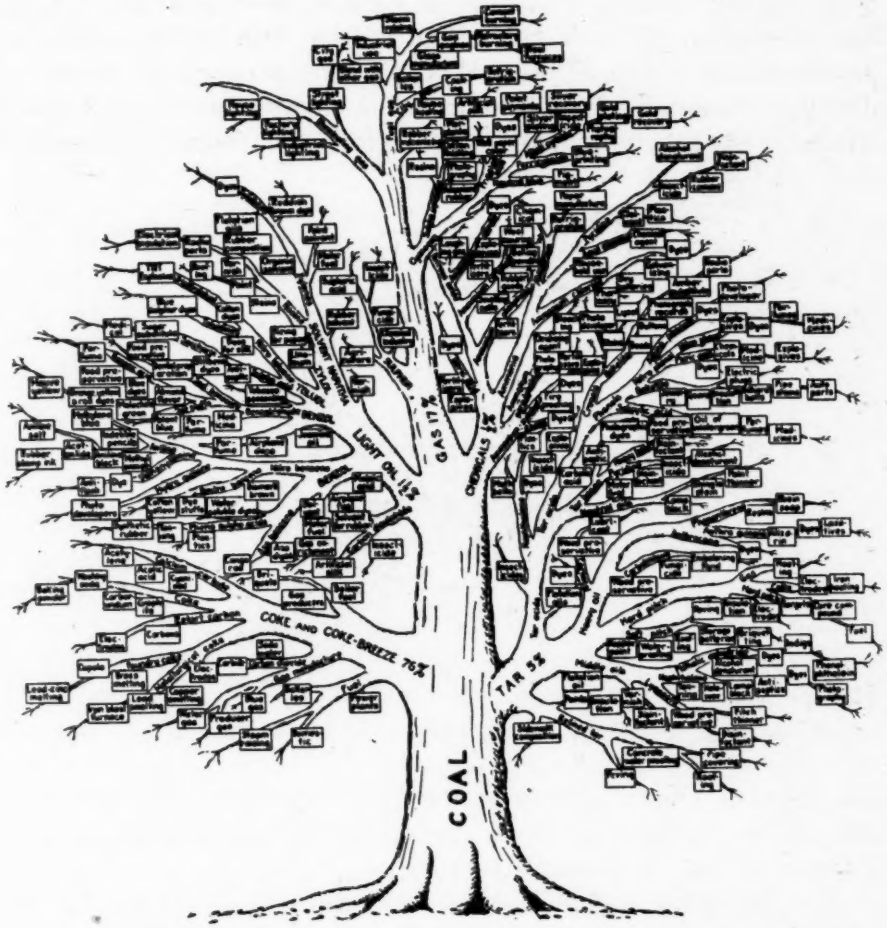

Fig. 2. Coal products tree. Showing the products obtainable from coal by carbonization in the modern by-product coke oven. Taken from *U. S. Steel News*, October, 1941. Published by courtesy of United States Department of the Interior, Bureau of Mines, Pittsburgh, Pennsylvania.

Prior to the coking process, coal is reduced in ash and sulphur content on washing tables, then allowed to drain, finally being conveyed by an electric-driven larry car along the top of the ovens and dumped into the crowns in the form of conical piles on the floors.

Coking begins when the coal has been leveled off and the door has been bricked up still further to within one and one-half inches from the top. The burning is regulated by air which enters thru the upper part of the door. The heat retained by the brick and loam backing from previous coking causes the coal to free volatile matter which ignites in the crown of the oven or in candle-like flames on the surface of the coal. The coking proceeds from the top downward because of the heat from the burning gases and vapors. At the temperature of about 650° to 900° Fahrenheit, the heated

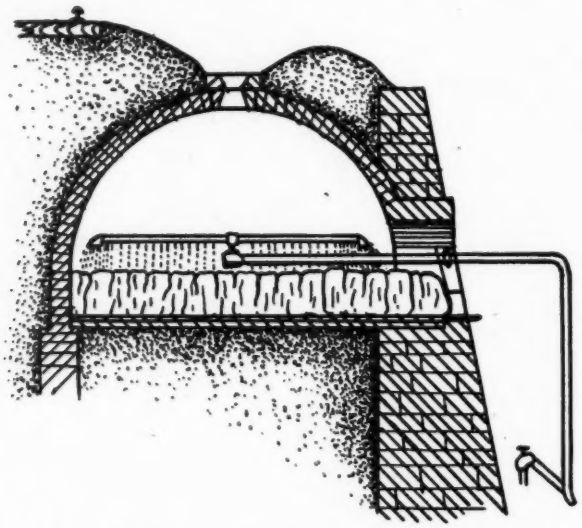

Fig. 3. Cross section of a beehive oven. Courtesy of *U. S. Steel News*, October, 1941, p. 3.

coal becomes plastic and fuses together to form a pasty mass or cake. However, this cake soon cracks in a vertical manner so that it forms a long, columnar structure.

The maximum temperature toward the end of the coking period is about 2000° Fahrenheit. The length of time required for burning or coking the coal varies. For furnace coke, 48 hours must elapse from the charging of the coal to the drawing or taking out of the coke. This is known as a light charge. Exceptions result where there is no production on Sunday and where the ovens which are charged on Friday and Saturday are allowed to burn for 72 hours. In this case the charge is a heavy one. Foundry coke burns longer, remaining in the process from 72 to 96 hours.

Beehive ovens may be drawn by hand or by machine. Both

techniques are used in southwestern Pennsylvania. Hand drawing is, in most cases, done by means of long forks, a long difficult procedure resorted to only where equipment is not very modern.

Most of the beehive ovens going full blast are relatively new. Some exceptions are those of the Vinton Coal & Coke Company, Vintondale, Pennsylvania, which has been operating its 152 "old timers" since 1908, and those 350 of the Whyel Coke Company which has been operating at Grays Landing, Pennsylvania, for over 50 years.

Today the beehive-oven coke produced in southwestern Pennsylvania is being shipped to points all over the Eastern Seaboard, to the mid-west, and to Canada. Some of it is sent out to chemical companies or to the manufacturers of both producer gas and water gas; the greater part is shipped to fuel and blast furnaces and foundries, and to large communities where it is crushed, screened, and sold for domestic purposes.

Prices vary with the different sizes and the type and grade of the coke. At the mine, furnace coke ranges from $6.00 to $7.00 per ton, foundry coke from $8.00 to $8.60. The freight rate varies from $3.00 to $3.50 per ton.

Coking is so important today, even in beehive ovens, that where coal may have been depleted to a great extent, outside coal is being transported many miles by truck to the ovens. However, the future of beehive ovens is uncertain. Men who know most about them say that these outmoded ovens will again cease operation when this emergency in which they have proven valuable has passed. Only in case of another similar emergency might they attain the position they now hold in the coking industry.

Interest-Stimulating Device

SOME PROBLEMS OF DIRECTION

Answer in the spaces provided.

1. Why do we speak of "up north" and "down south"?
2. Which is the "right bank" and which is the "left bank" of a stream?
3. Which is the "leaward side" and which is the "windward side" of a mountain? An ocean?
4. In what direction from the North Pole is Alaska?
5. If you traveled west from this city following a parallel on around the world, would you be going *west* during the entire journey?
6. Why does Chicago have sunrise before San Francisco does?
7. Why is it that the shortest steamship path between two ports on opposite coasts of an ocean and in the same latitude is usually not along a parallel of latitude?
8. If you go in the direction indicated by the north-seeking pole of a compass needle, are you going true north?
9. In what direction from the earth is the sun?
10. Are all the vertical lines (plumb lines) over the earth parallel to each other?
11. Are the people of Australia upside down?
12. Can ships sailing from Montreal, go *up* the St. Lawrence to the Atlantic Ocean?
13. How was it that Admiral Byrd at one time while piloting a plane, without changing his course, suddenly changed his direction from south to north?
14. What is meant by "clockwise" rotation? Anti-clockwise rotation?
15. What is meant by the expression—"west wind"?
16. What is meant by the Orient and Occident? Is there any definite place that is East or any that is West?

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GEOGRAPHICAL PUBLICATIONS

George B. Cressey. **Asia's Lands and Peoples.** 608 pages, maps, diagrams, appendices, index, references. McGraw-Hill Book Company, 1944. $4.50

The textbook "Asia's Lands and Peoples" by Dr. George B. Cressey of Syracuse University has been eagerly awaited by professional geographers who are aware of the fact that "this study has evolved out of nearly 100,000 miles of travel, spread over two decades" and who know that the author has previously demonstrated real literary talent as well as scholarly geographic ability. Now that the volume is published, it will almost unquestionably be adopted as the standard text for most geography courses on "Asia" in colleges and universities thruout the United States.

Opinions will differ as to its value but, partly because too much was expected by those familiar with the author's well-known book on "China's Geographic Foundations," some users will feel that the text may be improved appreciably as revisions are made and as new editions are printed. Criticisms will evolve around such points as: the use of minor place names that cannot readily be found in standard school atlases or on the maps in the text, the use of geological terminology which will leave all except a few unusually well-grounded students with a sense of frustration, the lack of continuity such as that which comes when central themes or ideas are developed, and a general tendency toward an encyclopedic enumeration of facts. The author recognizes that a tremendous volume of factual material is included. He states in the preface, "The reader will need to discern between supporting evidence and ideas and to select the information pertinent to his interests." Readers such as undergraduate students whose geographic thinking is just being formulated may feel that the text loses something in strength and value because the author shifts this burden of responsibility.

In spite of such criticisms there will almost certainly be general agreement that "Asia's Lands and Peoples" is on the whole a good, serviceable textbook. The compilation of relatively recent geographic information on the Soviet Union (including the European portion) is probably the best now available and there can be no question concerning the soundness of the rest of the text. Most readers will enjoy the literary style of the author and they will appreciate the technique of presentation.

Three rather well defined methods of approach are used. One is represented by chapters which include what the author considers to be the highlights of the volume. In these the geographic factors are considered in their relationship to both the domestic and foreign problems of the major political units of Asia. The numbers of these chapters are indicated in the preface. Intellectually curious adults who may not want to read the whole book will be grateful for this concession to their interest. In the remainder of the text, both the topical method and the regional method are used. The author has segregated the two types of writing and has suggested in the preface which chapters are to be omitted if a teacher chooses to use one method and not the other in a brief course.

The text is well documented with an annotated bibliography and is well illustrated with carefully selected, large, clear photographs. Teachers will be interested in noting that lantern slides of any photographs or drawings included are available thru the Syracuse University Book Store.

WILBUR M. HANLEY

University of Wisconsin

Nicholas John Spykman. **The Geography of the Peace.** Harcourt Brace and Company, New York, 1944, 66 pages, price $2.75.

Nicholas J. Spykman merits an everlasting place among the leading students of political geography. Many readers of the JOURNAL OF GEOGRAPHY heard Professor Spyk-

man of Yale University address a joint session of the Association of American Geographers and American Political Science Association. in New York City in December, 1941. His subject was "Frontiers and the Problem of Security." It was an inspiring-thought-provoking lecture, the type which one recalls not only in terms of contents but also with reference to the dynamic personality and brilliant mind of the speaker.

Professor Spykman's interest in the relation between geography and national affairs was first revealed in his published works in 1938 and 1939, appearing in the *American Political Science Review*. In 1942 the results of a study of national security problems was published in book form by the Yale Institute of International Studies under the title "America's Strategy in World Politics." His interest in geopolitical problems, particularly national security, continued to the day of his untimely death and loss to humanity on June 26, 1943. In order that his unpublished lectures, maps and notes should not be lost, the Yale Institute of International Studies has prepared under the able editorship of Miss Helen R. Nicholl, a research assistant of Professor Spykman for two years, "The Geography of the Peace."

The exposition is a comprehensive presentation of geopolitical methods and interpretation as applied to the fundamental problem of our foreign policy. It is essentially based on the conception that geographical factors are fundamental in the determination of national power and security. Every student of geography should read the "Geography of the Peace" once, twice or more. Some may not fully agree with the suggested procedures and recorded interpretations of the study of national security and some may conclude that Professor Spykman has not in all cases duly evaluated the place of human factors. The contents consists of an Introductory Statement by the Director of the Yale Institute of International Studies, Mr. Frederick Sherwood Dunn and five major sections, namely, (1) Geography in war and peace, (2) Mapping the world, (3) The position of the western hemisphere, (4) The political map of Eurasia, and (5) The strategy of security. Fifty-one illustrations, including selected types of projections and political-economic maps, greatly enhance the quality of the publication.

F. A. CARLSON

Ohio State University

T. S. Lovering. **Minerals in World Affairs.** 394 pp., maps, diagrams and photographs. Prentice-Hall, Inc., New York, 1943. $4.00.

A collection of "sufficient material to satisfy the non-specialist who wishes information on mineral economics, geology, and trade in metals vital to industrial nations" is offered in this volume by Lovering, the able and well-known economic geologist. The four parts which comprise the book seem appropriately organized into (1) Economics, History, and Geology (one-fourth of book), (2) Industrial Minerals: The Mineral Fuels, (3) Industrial Minerals: Iron and the Ferro-alloy Metals, and (4) Nonferrous Industrial Metals. The appendix (33 pages) includes tables showing production by countries for several representative years, in a form usable by teachers, students and laymen. Also statistics for coal, copper, iron ore and pig iron prior to 1890 are given to show historical trends of the world producing countries. One-third of the forty illustrations are distribution maps, some of which are of the folding type; the cartography is of average quality. Historical and modern pictures and geologic cross-sections aid in interpretation. Wheels and graphs might more effectively take the place of some statistical tables.

The content is not only well organized, but is interestingly narrated and expressed simply. For each mineral discussed the properties and uses, substitutes, technology, geology, important sources, production and consumption, commercial and political control and national policies are each treated. References for each chapter heighten the authenticity of the material. Discussion of national mineral policies is adequately stressed, but in the realm of international mineral policies the book is disappointing.

Timely topics such as the need for global plan and study, supervision over distribution and consumption of deficiency minerals in adolescent or pseudo-dynamic nations, the possibility of national stock-piling for international use, and minerals in relation to "collective security" of nations, are not adequately treated. The book is, nevertheless, very effective and should wear well.

L. LEMAR STEPHAN

State Teachers College
Troy, Alabama

Thomas C. Donnelly, Editor. **Rocky Mountain Politics.** 304 pp.; maps, bibliog., index. The University of New Mexico Press, Albuquerque, N.M.

Altho not strictly a new book, *Rocky Mountain Politics* may enlist the interest of teachers in search of supplementary readings in North American Geography. The eight chapters, one on each mountain state, including Nevada, present fresh and interesting information on a variety of themes, stressing, as the title implies, politics—local, state, national. Each author sets the stage for a discussion of social conditions with a geographical survey which is based largely on individual observation and experience. However, if the student consulting this work already has a good geographical background, deficiencies in this respect are not material. The purpose of the book is "not to argue the claims of the eight states to regional recognition, but to bring their politics to the attention of students of political parties." The sectionalism of Idaho, the conflicting cultures of New Mexico, and the changeable, often unpredictable political trends of the sister states, are thoughtfully reviewed. Written before the entrance of this country into the world conflict, the book maintains a leisurely pace contrasting with more recent works in its field.

RALPH H. BROWN

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Hans W. Weigert and Vilhjalmur Stefansson, Editors. **Compass of the World.** A Symposium on Political Geography. 466 pp., maps, index. The Macmillan Company, New York, 1944.

In the manner of Highway C, better known as Alcan (effectively discussed by co-editor Stefansson in Article 16 of this book), this collection of essays permits the reader to visit territory hitherto but poorly known, often climbing to heights of eloquence rarely attained in non-fiction literature; here, for brief intervals, dipping to ordinary levels, and there, traversing short, barren stretches; also, like the Alcan, which transects a varied land toward a well-defined objective, the twenty-eight articles of the symposium, when ranged together in this manner, achieve a continuity which would scarcely have been predicted and reach a satisfying, if not too definite goal.

The take-off into politico-geographical thinking and planning is none too reassuring, but the articles of Chapter I ("The New World: Geography and Geopolitics") gather weight and interest in Walsh's "Geopolitics and International Morals," Bowman's "Geography vs. Geopolitics," and Quincy Wright's "The Balance of Power." By this time the reader is convinced of the correctness of the editorial statement that the team of writers all agree on one point: "our interrelated world cannot be governed by the power-political schemes of yesterday's geopolitics."

Chapter II, "New Directions and Skyways," attempts to "express and define the fundamentals of a new geography in a shrinking world whose sea lanes and highways are paralleled by skyways." For many geographers, to whom the "new geography" has an all-too-familiar ring, this chapter will represent one of the dips to an average level, but the general reader may emerge from a reading of it with a more favorable opinion.

Chapter III, "Reflections on the Heartland," written entirely by geographers, contains articles by J. Russell Smith, Sir Halford Mackinder, Ellsworth Huntington, James Fairgrieve, and Richard Hartshorne. Particularly significant to the politico-geographical theme is Mackinder's return to his concept of the strategical heartland (to which, however, he succeeds in adding little new), and Hartshorne's interpretation of the "shatter zone," made up of the small countries and nationalities east of the line from the Baltic to the Adriatic.

Thrilling to read is Chapter IV, "The Northward Course," a theme which all readers would expect to be included in a Stefansson book, and here for special reasons. Article 17, "The Aleutians," is a bit too impressionistic, and the "Northward Course of Aviation" contains a more than seemly approval of the commercial and self-interested ventures of Pan American Airways, but these and the other contributions are informative and engrossing, especially Stefansson's "The North American Arctic."

One of the more penetrating articles of the entire symposium is "The Inland Crossroads of Asia," by Owen Lattimore, writing in Chapter V, "Reflections on Asia." It is in this chapter, too, that co-editor Weigert disposes handily of German *geopolitik*. "The German definition limits its use to Germany," he says, "a warning which should be heeded by those who try to adapt the sinuous ways of Haushofer geopolitics to American use." Occasional differences of opinion among these many writers is illustrated by Weigert's statement that "both Mackinder and Haushofer remained captives of Mercator's maps," altho the title of Mackinder's article is "The Round World and the Winning of the Peace," and its author does very well indeed with the global earth.

The symposium suitably concludes with a glimpse into the predictable future in "The Shifting Balance of Man Power." Here, in papers by Quincy Wright, Frank Notestein, and Frank Lorimer, is one of the heights surmounted in this collection of essays. The matter dealt with is truly world-revolutionary.

Need it be added that no forward-looking person can afford to disregard this book?

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